

# Hazardous Substances Emergency Events Surveillance (HSEES) 1994 Annual Report

## October 1, 1993–September 30, 1994

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### Background of HSEES System

While many national data bases are designed to obtain information on hazardous substance emergencies, they often only contain data on a small proportion of the emergencies that occur each year. In addition, they offer very little information about the public health consequences of such events. They do not describe the many variables that are associated with this morbidity and mortality, nor do they identify populations affected (e.g., employees, responders, general public). Consequently, a surveillance system focusing on the direct public health impact of hazardous substance emergencies was established in 1990 by the Agency for Toxic Substances and Disease Registry (ATSDR).

The Hazardous Substances Emergency Events Surveillance (HSEES) system was established to:

- Describe the distribution and characteristics of hazardous substances emergencies;
- Describe the morbidity and mortality experienced by employees, responders and the general public;
- Identify risk factors associated with the morbidity and mortality; and
- Identify strategies that may reduce future morbidity and mortality from the release of hazardous substances.

A hazardous substance release is entered into the HSEES system if it meets the following criteria:

1. An uncontrolled or illegal release or threatened release of one or more hazardous substances; **and**

2. The substances that are actually released or threatened to be released include **ALL** hazardous substances, except petroleum products; **and**
3. The quantity of the hazardous substances which are released, or are threatened to be released, need (or would need) to be removed, cleaned up or neutralized according to federal, state or local law; **or**
4. Only a threatened release of hazardous substances exists, but this threat leads to an action, such as an evacuation, that can potentially impact on the health of employees, responders or the general public. This action makes the event eligible for inclusion into the surveillance system even though the hazardous substances are not released.

Data collection for the Missouri HSEES system began October 1, 1993. Information collected includes:

- Where and when the event occurred, including whether the event took place at a fixed facility or during the transportation of the substance;
- Weather conditions, time of day and day of the week when the event occurred;
- Substance(s) and quantity released or threatened to be released;
- Data related to possible exposure, such as proximity to residential areas; the primary use of the nearby land (e.g., commercial, industrial, agricultural or residential); the number of people living within one-quarter, one-half and one mile of the event; and how many people were actually home when the release took place;
- Deaths and injuries that resulted from the event, including who was injured (e.g., employee, general public, re-

sponder), the number and severity of injuries and steps that may have been taken to prevent deaths and injuries, (e.g., type of personal protective equipment that the injured used, use of decontamination, evacuation and in-place sheltering).

All Missouri HSEES data is transmitted to ATSDR for analysis with the data from the other 11 participating states. Personal/company identifiers are not transmitted to ATSDR to protect the confidentiality of program participants.

Because the intent of the HSEES program is to reduce the morbidity and mortality related to hazardous substances emergency events, it is important that the public, emergency responders, employees and industries receive information concerning case investigations. For those cases where intervention strategies can be developed which would prevent similar future incidents, specific summary investigation reports also will be produced and distributed to the community involved. Where appropriate, health education programs will be conducted to promote the prevention strategies.

### Analysis of Data on Hazardous Substances Emergency Events

The Missouri Department of Natural Resources Environmental Services Program maintains Environmental Emergency Response (EER) reports. All environmental emergencies are to be reported to a 24-hour response line at (314) 634-2436. A total of 2,017 reports were received from October 1, 1993–September 30, 1994. Of these, 966 (48%) were petroleum related, leaving 602 potential hazardous substances emer-

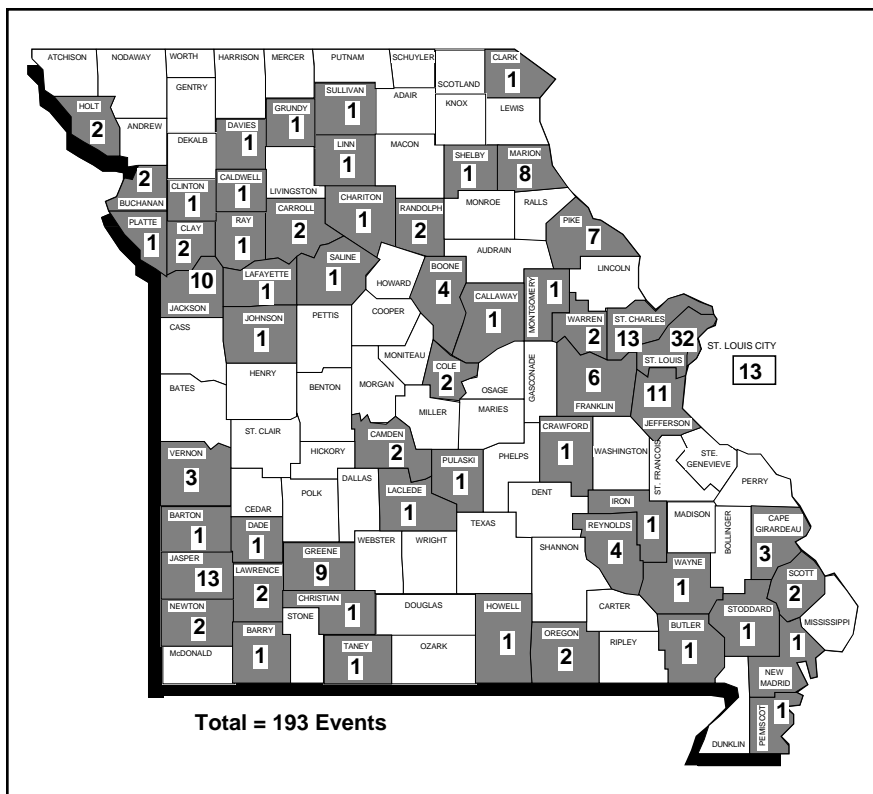


Figure 1. Location of hazardous substances emergency events by county, Missouri HSEES, October 1, 1993–September 30, 1994.

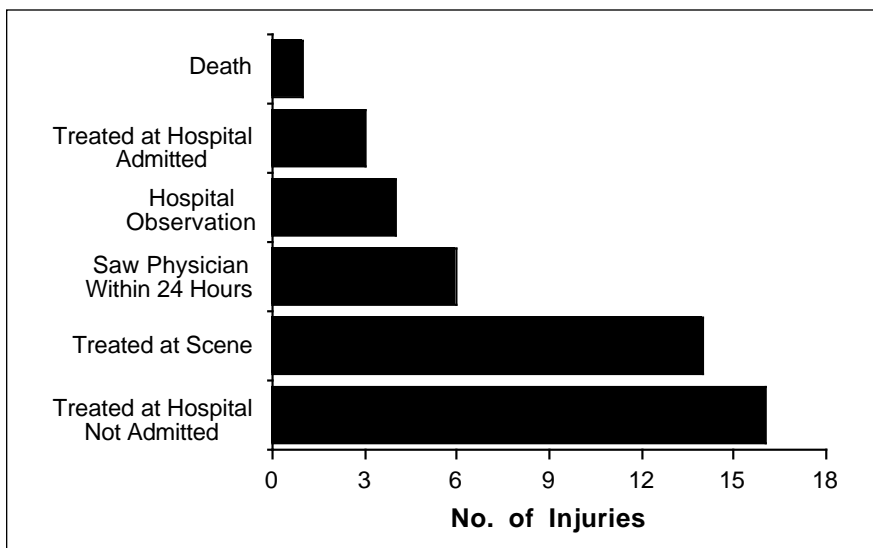


Figure 2. Number of injuries reported by severity, Missouri HSEES, October 1, 1993–September 30, 1994.

gency events. From these 602 reports, investigations and report forms were completed for 215 events which actually involved hazardous substances. One hundred ninety-three (90%) events met the HSEES case definition.

Event locations were scattered throughout the state, occurring in 56 counties and the City of St. Louis. This represents nearly 50 percent of the state. Figure 1 shows the number of events occurring in each county.

Of all events, 157 (81%) occurred on weekdays. Thirty-six events (19%) occurred on the weekend. More than half the events, 126 (65%), occurred between 6 a.m. and 6 p.m. with 105 (54%) of the 126 events occurring between the core working hours of 8 a.m. and 5 p.m.

Evacuations were ordered in 25 (13%) events. The number of people evacuated was known for 20 events and unknown for 5 events. From these 20 events, 622 people were evacuated. Of known people evacuated, the range of people affected was from 1–160 in any single event. Seventeen of the evacuations involved the evacuation of people from an affected building(s) or part of a building, four were circle/radius evacuations, two were downwind evacuations and two had no criteria. A total of 35 substances were released in these 25 events. One event involved employees who left work because of a release, but no official evacuation was ordered.

Twenty-two (11%) releases resulted in 43 victims and 1 death. See Figure 2. The largest number of victims associated with a release was four. The most common type of injury reported was respiratory irritation, which occurred in 19 (43%) of the victims. Other types of injuries experienced included eye irritation, chemical burns, thermal burns, skin irritation, dizziness, vomiting and other (e.g., taken to the hospital for observation, hysteria, nervousness). See Figure 3.

Of the 44 victims, one victim died, 14 were treated at the scene, 16 were treated at but not admitted to a hospital, 3 were admitted to a hospital and 4 were taken to a hospital for observation. Six people saw a private physician within 24 hours.

Employees were the largest group injured by releases; twenty-nine employees were injured and one died. Responders were second in number of injuries and the general public had the least number of injuries. See Figure 4. Nine-

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teen substances were released in the 22 events where injuries occurred. Ammonia was involved with the greatest number of injuries 14 (32%). This was followed by chlorine with 6 (14%) injuries and TCE with 4 (9%) injuries.

We are indebted to the Department of Natural Resources Environmental Services Program for helping us investigate these hazardous substances release events. We rely heavily on this unit for notification of releases and frequently contact them for circumstances surrounding a release.

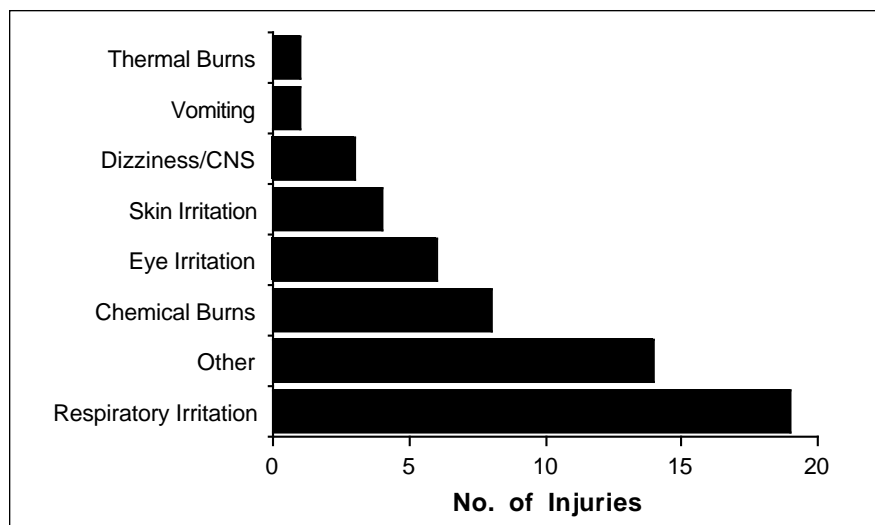


Figure 3. Number of injuries reported by type, Missouri HSEES, October 1, 1993–September 30, 1994.

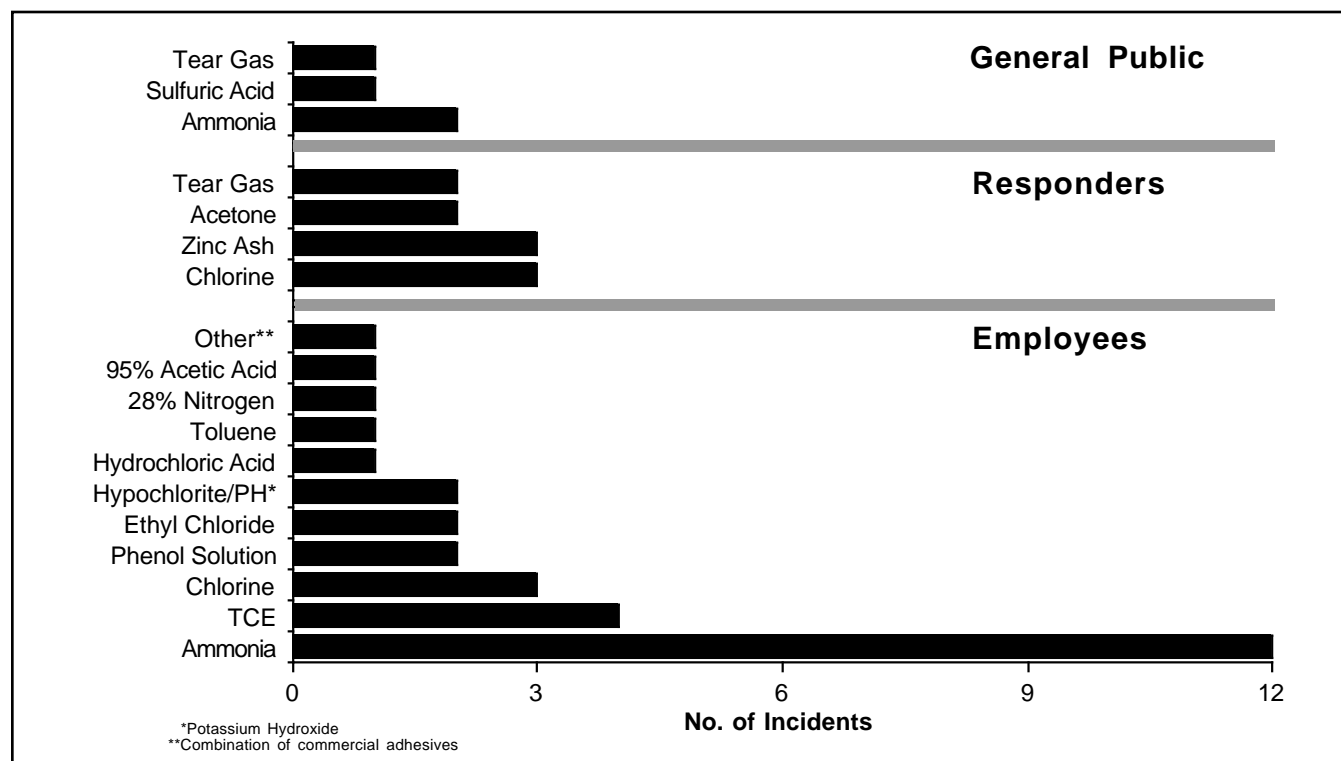


Figure 4. Number of incidents reported by substance and type of victim, Missouri HSEES, October 1, 1993–September 30, 1994.